

Work Order ID 164533***164533***

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Thursday, July 20, 2017 10:36:14 AM

Item ID: D2244-116 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Step Extrusion
Start Date: 7/20/2017 Start Qty: 86.00 ***86*** Cust Item ID:
Required Date: 8/30/2017 Req'd Qty: 86.00 ***86*** 108x Customer:

Reference:

Approvals: Process Plan: **DAS 13 9-89** Date: **JUL 20 2017** Tooling: Date: Run Start ***NR1***
QC: Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D2244	Rev D1

100

0.00

100

PURCHASING

Purchasing

Memo

Issue P/O: **37143**
a) Extrude as per Dwg D2244

b) Material: 6061-T6 (QQ-A-200/8)

c) Minimum yield tensile strength = 35 ksi

d) Minimum ultimate tensile strength = 38 ksi

e) Minimum elongation = 8%

f) Order at 116" long

g) Caradon Indalex Tool # MH-18865

h) Material cert's is required

***EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE
SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH
AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS,
OR DENTS.***

MUST BE WELL PACKAGE, IF NOT IT WILL BE REFUSE

86**JUL 20 2017****DAS
13
9-89**

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
110 *110* Packaging Packaging	Receive & Inspect for Damage & Mat'l Certs Memo Ensure certification are attached	0.00 1.72							108 x 8017-9-5
120 *120* QC Quality Control	QC6- All purchased or subcontracted products Memo Check Pull test per Dwg D2244 for compliance page attached. Check hardness with Webster tester	0.00 0.00							(108) 17-09-06 P1
130 *130* Packaging Packaging	Identify as per dwg & Stock Location: <u>WA3</u> Memo LOCATION : WA003	0.00 0.86							108 SEP 07 2017 DAS 24 9-89

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140	QC21- Final Inspection - Work Order Release	0.00							
140									
QC	Memo	8.60							
Quality Control									

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SEP 07 2017

Picklist Print

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Work Order ID: 164533

164533

Parent Item: D2244-116

D2244-116

Parent Item Name: Step Extrusion

Start Date: 7/20/2017

Required Date: 8/30/2017

Start Qty: 86.00

Required Qty: 86.00

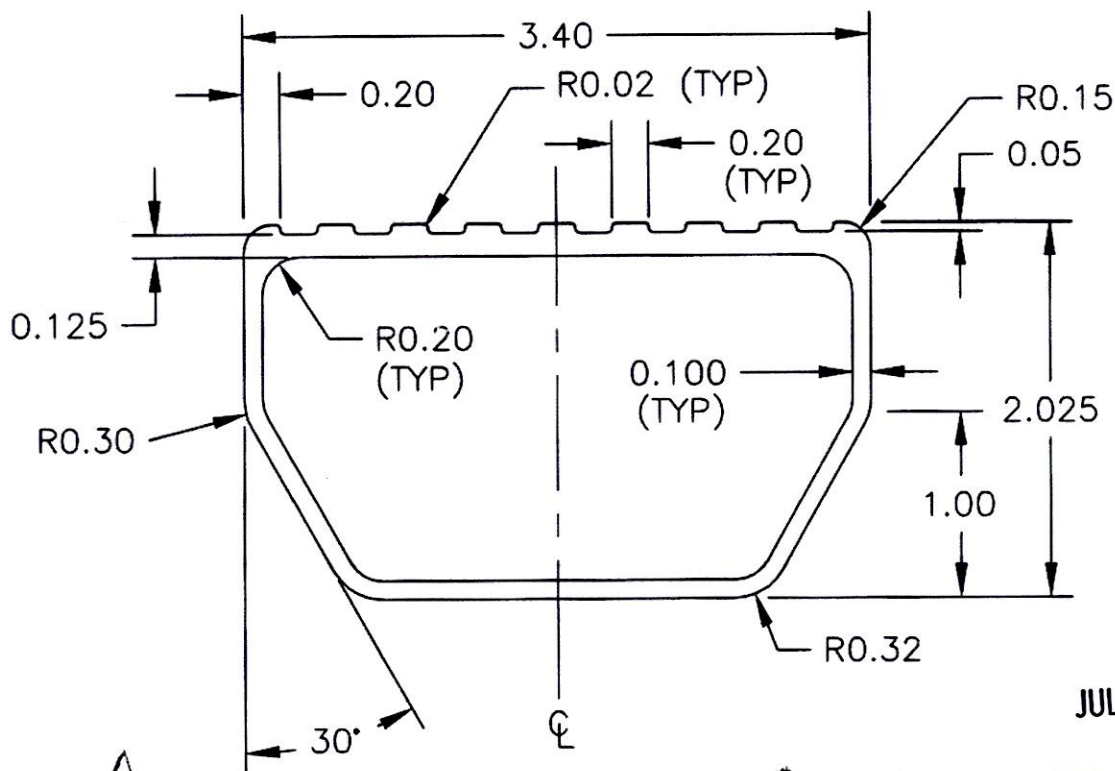
Comments: IPP: A 24.03.04 New Issue KJ

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2244-116P *D2244-116P* Step Extrusion		Purchased	No			110	Each	0.0000	1	86 / 86 86 17-9-5.			
										**			



DESIGN BW	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>KE</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2244	REV. D SHEET 1 OF 1
DATE 98.11.18	TITLE STEP EXTRUSION		SCALE 1:1
A	94.07.05	NEW ISSUE	
B	94.07.11	REDESIGNED	
C	94.08.08	REDESIGNED	
D	98.11.18	REMOVED 6005A MATERIAL INCORPORATED DEO 9081	
DI	01.04.17	ADDED DIE # <i># CP</i>	

RELEASED
18.11.25 *KE*



JUL 20 2017

△ DI MANUFACTURED USING CARBON INDALEX DIE # MH-18865

PART NUMBER D2244-XX.X
XX.X IS CUT LENGTH IN INCHES

MATERIAL: 6061-T6 (QQ-A-200/8)

DAS
13
9-89

W10.164533

A SAMPLE FROM EACH BATCH WILL BE PULL TESTED TO ASTM STANDARD B221 BY AN APPROVED TESTING FACILITY TO ENSURE THAT THE BATCH MEETS THE MINIMUM MECHANICAL PROPERTIES STATED BELOW:

MINIMUM TENSILE YIELD STRENGTH = 35 ksi
MINIMUM ULTIMATE TENSILE STRENGTH = 38 ksi
MINIMUM ELONGATION = 8%

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO37143**

Purchase Order Date 7/20/2017 10:35:07 AM
PO Print Date 7/20/2017

Page Number 1 of 2

Order From : VC-SAP001
SAPA CANADA INC
C/O M91634
P.O. BOX 11634 SUCCURSALE CENTRE VILLE
MONTREAL, QUEBEC H3C 5Y9
CANADA

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

E-MAILED
JUL 20 2017

Contact Name
Vendor Phone 877-922-7272

Ship To Contact
Ship To Phone
Ship Via: Yours ppd
Ship Acct:

Buyer Chantal Lavoie
Customer POID
Customer Tax # 10127-2607
Terms Net 30
Currency CAD
FOB FCA - (Free Carrier)

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	D2244-116P EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES NICKS OR DENTS EXTRUDE AS PER DWG D2244-116 REV. D DIE # MH-18865 B164533 SET UP CHARGE INCLUDED IN PRIICNG	Step Extrusion	8/30/2017 Yes 8/30/2017		86.00 Each	\$42.27	\$3,635.00

recu 108x
SAPA-9-5.
SAPA-9-5.

Line Total: \$3,635.00

Note:

7/20/2017



Adresse Postale: Sapa Canada, Inc
325, rue Avro
Pointe-Claire Québec H9R 5W3
Téléphone: (514) 697-5120
Télécopieur: (514) 694-8310

Packing Slip / Détail de Livraison

Packing Slip No / 103831
Bon de Livraison

Order no/ 7071371 1
Commande

Ship to/Expédiée à DART AEROSPACE LTD 1270 ABERDEEN STREET HAWKESBURY, ONT K6A1K7	Sold to/Vendu à DART AEROSPACE LTD 1270 ABERDEEN STREET HAWKESBURY, ONT K6A1K7	Special Instr / Instr. Spéciales
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Cust No/No du Client 201355	Cust No/No PO du Client 37143	PPD/PAYÉ X	Ord Dte/Dte Comm 17/07/24	Our Ord Dte/ Notre Dte la Comm 17/07/24	Sapa G.S.T #: R857314058
---------------------------------------	---	----------------------	-------------------------------------	--	------------------------------------

PST/TPV *6122-5207	Terms/Cond 5-89	Date Required/ Date Requite	Shipped/ Expédiée 17/08/29	Shipped Via/ Expédiée Par OTTAWA 30 AOUT
------------------------------	---------------------------	--------------------------------	---	--

Item No	Ordered Weight Pcs/ Commande Poids Pcs	Sapa Die no/ Matrice d'Sapa	Customer Description/ Description de Client	Alloy & Temper/ Alliage et Trempage	Length Longueur	Backorder Wgt Pcs Arrière Poids Pcs	This Shipment Bdls Wgt Pcs Com Expédiée Ballots Poids Pcs
---------	---	--------------------------------	--	--	--------------------	--	---

1	500 86		DUE = 2017/09/01 AU30 STEP EXTRUSION MH 18865 DS2244-116P BUNDLE = 1312064 1312065 1312066 We hereby certify that the material supplied meets the chemical properties as published by the Aluminum Association, and requirements of our Quality procedures	6061 T6	2946 MM		3 624 108 POIDS EN KGS
SP7-5							

Aluminum Extrusions - Anodizing - Fabrication - Painting
Profiles D'Aluminum - Anodisation - Fabrication - Peinture

The above items were received in good order.
Les articles ci-dessus ont été reçu en bon ordre.

By/Par.....

325 rue Avro
Pointe-Claire, QC, Canada, H9R 5W3
Téléphone (514) 697-5120
Fac-simile (514) 694-8310



Rapport des propriétés mécaniques Mechanical Properties Test Report

Client / Customer : **DART AEROSPACE LTD**
Adresse / Address : **270 ABERDEEN STREET
HAWKESBURY ONT,
K6A 1K7**

commande Sapa / Sapa order # : **7071371** **DAS**
bon de commande / Purchase order # : **37143** **5**
de matrice / Die # : **MH 18865** Description : **Step Extrusion**
Alliage & trempage / Alloy & temper : **6061 T6** Customer Part #: **D2244-116P**
Contrôle / Control # : **95991-1**
Coulée / Cast # : **69175**

	Min.requis Min.required	Résultat actuel Actual results
Tension ultime Ultimate stress (psi)	38 000	43910
Contrainte élastique Yield stress (psi)	35 000	37330
% élongation dans 2" % elongation in 2"	8	10.2

Composition chimique typique / Typical chemical composition :

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
6063	0,20 - 0,60	0,35 Max	0,10 Max	0,10 Max	0,45 - 0,90	0,10 Max	0,10 Max	0,10 Max
6005	0,60 - 0,90	0,35 Max	0,10 Max	0,10 Max	0,40 - 0,60	0,10 Max	0,10 Max	0,10 Max
6005A	0,68 - 0,72	0,15 - 0,27	0,08 - 0,12	0,20 - 0,24	0,48 - 0,52	0,03 Max	0,05 Max	0,03 Max
6061	0,40 - 0,80	0,70 Max	0,15 - 0,40	0,15 Max	0,80 - 1,20	0,04 - 0,35	0,25 Max	0,15 Max
6351	0,7 - 1,3	0,5 Max	0,10 Max	0,40 - 0,80	0,40 - 0,80	---	0,20 Max	0,20 Max

Nous certifions que le matériel fourni rencontre les exigences chimiques telles qu'annoncées par la norme ASTM B-221-14 excepté pour la section 8.2 (nombre de spécimen).

We hereby certify that the material supplied meets the chemical properties as published by the ASTM B-221-14 except for section 8.2 (number of specimen).

Sincèrement vôtre,
Yours truly,

Date : **2017-08-21**

Daniel Alfredo Pelletier
Directeur Qualité
Quality Director

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: _____
 DATE: SEP 06 2017

PO / BATCH NO.: po37143

MATERIAL CERT REC'D: yes
 QUANTITY RECEIVED: 108 pcs
 QUANTITY INSPECTED: 108 pcs
 QUANTITY REJECTED: 0

THICKNESS ORDERED: .100
 THICKNESS RECEIVED: .100
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <u>N</u>	
CORRECT FINISH	<u>Y</u> N	
CORROSION	Y <u>N</u>	
CORRECT GRAIN DIRECTION	<u>Y</u> N	
CORRECT MATERIAL PER M-DRAWING	<u>Y</u> N	<u>Asm B221</u>
CORRECT THICKNESS	<u>Y</u> N	
PHOTO REQUIRED	Y <u>N</u>	
CORRECT REF # TO LINK CERT	<u>Y</u> N	<u>po37143</u>
CORRECT MATERIAL IDENTIFICATION	<u>Y</u> N	
CORRECT M# ON THE MATERIAL	<u>Y</u> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <u>N</u>	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <u>N</u>	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					<u>6061T6</u>
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					<u>17</u>

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>DAS</u> DATE: <u>SEP 06 2017</u>	SIGNED OFF BY: _____ DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

MATERIAL RECEIPT INSPECTION FORM

INSTRUCTIONS FOR INSPECTING BAR, TUBING, ROUND, & SHEET STOCK

- 1- VERIFY STOCK TO DART PURCHASE ORDER REQUIREMENTS
- 2- MEASURE ALL DIMENSIONS FOR EACH PURCHASED STOCK
 - a. WIDTH, THICKNESS, DIAMETER, WALL THICKNESS & LENGTH
- 3- VERIFY CONDITION OF MATERIAL i.e. DAMAGED, CORRODED, etc.
- 4- VERIFY THAT SUPPLIER HAS A NUMBER (HEAT #) ON ITS RECEIVING REPORT TO LINK TO MATERIAL CERTS
- 5- VERIFY MATERIAL CERTS ARE CORRECT TO THE DART RELEASED M-DRAWING
- 6- USING PORTABLE HARDNESS TESTER VERIFY HARDNESS OF THE MATERIAL TO THE DRAWING & RECORD
note Aluminum material only

INSTRUCTIONS FOR INSPECTING SKIDTUBE & STEP EXTRUSION

- 1- VERIFY TO DART SUPPLIED DRAWING
 - 2- SAMPLE INSPECT MATERIAL IN BUNDLE TO ENSURE MATERIAL CAN BE RECEIVED INTO DART
 - 3- USING PORTABLE HARDNESS TESTER VERIFY HARDNESS OF THE MATERIAL TO THE DRAWING
 - 4- VERIFY THAT MATERIAL CERTS MATCH TO WHATS CALLED UP ON THE DART DRAWING
- AFTER MATERIAL PASSES INSPECTION**
- 5- HAVE DART EMPLOYEES START STOCKING MATERIAL BUT REQUEST MIN **20pcs** FOR FULL INSPECTION
 - 6- INSPECT ALL DIMS AS PER DRAWING REQUIREMENTS

INSTRUCTIONS FOR INSPECTING CROSS TUBE MATERIAL

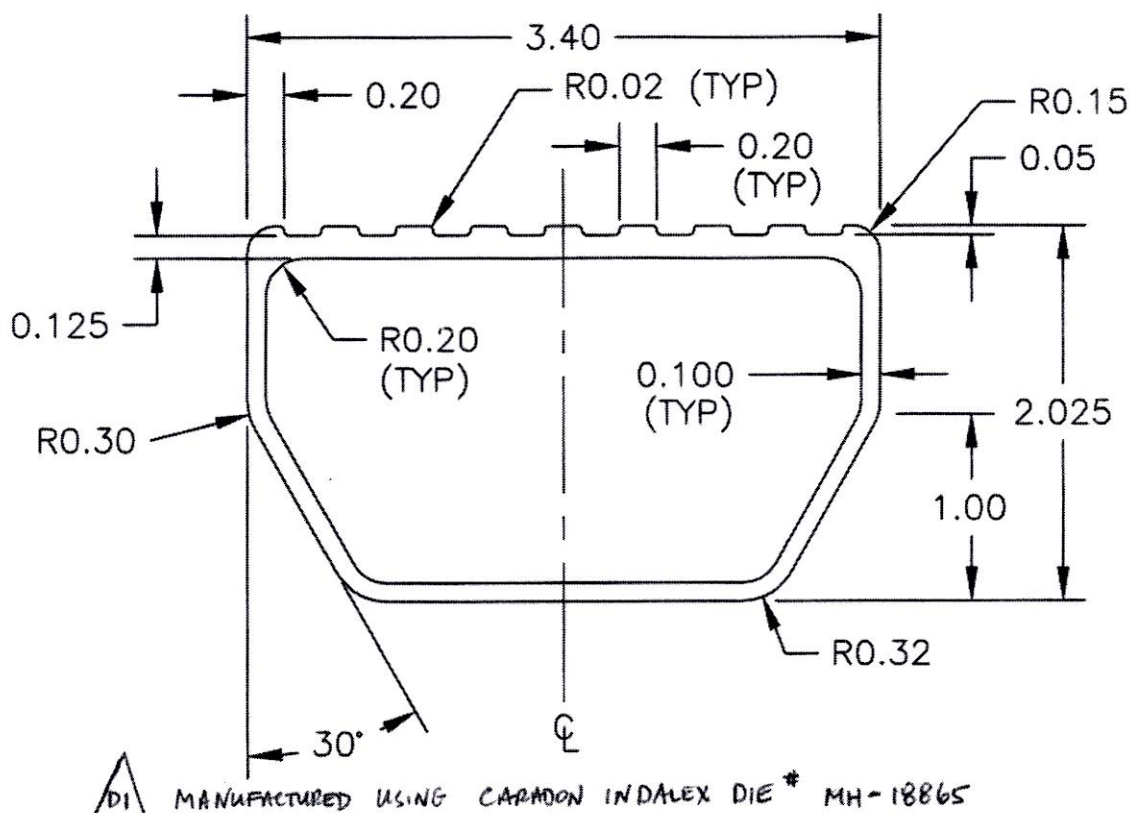
- 1- VERIFY MATERIAL CERTS MATCH THE REQUIREMENTS ON THE DART DRAWINGS
- 2- INSPECT MIN. HALF THE BATCH OF EXTRUSION RECEIVED INTO DART
- 3- INSPECT MATERIAL AS PER THE EXTRUSION REPORT
 - a. WALL THICKNESS USING ULTRA-SONIC IN 4 LOCATIONS
 - b. OUTSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - c. INSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - d. STRAIGHTNESS @ CENTER OVER 12" SPAN
 - e. WALL THICKNESS USING TUBE MICROMETER HIGHEST/LOWEST BOTH ENDS
- 4- IDENTIFY EACH TUBE IN SEQUENCE OF INSPECTING (TUBE 1, TUBE2.....) AND W/O# AND PO#
- 5- RECORD ALL FINDINGS ON EXTRUSION REPORT

IF ANY QUESTIONS PLEASE SEE QC COORDINATOR BEFORE GOING FURTHER



DESIGN BW	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>KE</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2244	REV. D SHEET 1 OF 1
DATE 98.11.18	TITLE STEP EXTRUSION	SCALE 1:1	
A	94.07.05	NEW ISSUE	
B	94.07.11	REDESIGNED	
C	94.08.08	REDESIGNED	
D	98.11.18	REMOVED 6005A MATERIAL INCORPORATED DEO 9081	
D1	01.04.17	ADDED DIE # <i># CP</i>	

RELEASED
98.11.25 *KE*



PART NUMBER D2244-XX.X
XX.X IS CUT LENGTH IN INCHES

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